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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,150	01/08/2001	Toshiki Tajima	IL-10626	6360

7590

07/17/2003

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EXAMINER

WELLS, NIKITA

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 07/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/757,150

Applicant(s)

TAJIMA, TOSHIKI

Examiner

Nikita Wells

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-90 is/are pending in the application.
- 4a) Of the above claim(s) 1-39, 43-47, 51-65 and 69-87 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-42, 48-50, 66-68 and 88-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 40-42, 48-50, 66-68 and 88-90 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 and 2. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 40-42, 48-50, 66-68, and 88-90, are rejected under 35 U.S.C. 103(a) as being unpatentable over Umstadter et al. (5,789,876) in view of Schultheiss et al. (5,576,593), and further in view of Slatkin et al. (5,339,347) and S.B. Segall (4,215,274).

With respect to claims 40-42 and 48-50, Umstadter et al. disclose (Abstract; Figs. 4 and 17; Col. 1, line 36-42; Col. 10, lines 18-37;) an accelerator comprising: a laser system (200); a target (310) to receive a laser pulse from said laser system (200); and a beam transport system operatively coupled to said target (310). Umstadter et al. also disclose that the transport system is capable of delivering energy of the electron beam up to 3 GeV (see Col. 1, line 36-42) while the Applicant's claim 48 teaches that the transport system has the capacity of delivering energy in the range of approximately 10 to approximately 500 MeV. Umstadter et al. fail to disclose that the target has a first layer and a second layer and that the laser pulse is capable of producing an energy per laser shot of between approximately 1 and 10 Joules. However, Schultheiss et al. disclose that the target has a first layer and a second layer (Col. 6, lines 40-45) and that the laser pulse capable of producing 1 and 10 Joules of energy (Col. 7, lines 8-11).

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize and substitute the apparatus for accelerating charged particles of Schultheiss et al. into the apparatus for generating and accelerating ultra-short electron pulses of Umstadter et al. in order to obtain optimum acceleration of the electrons in a shorter distance thus allowing a much smaller overall apparatus.

With respect to claims 66-68, Umstadter et al. disclose (Abstract; Figs. 4 and 17; Col. 1, line 36-42; Col. 10, lines 18-37) an accelerator comprising: a laser system (200); a target (310) to receive a laser pulse from said laser system (200); and a beam transport system, but fail to disclose that the beam transport system is capable of delivering energy which may penetrate about 10 to about 20 cm beneath the surface of skin tissue in a treatment field, delivering energy to produce a dose per shot at a treatment field in the range of about .1 to about 10 Gy, or a dose per second at a treatment field of approximately .1 to approximately 100 Gy/second. However, Slatkin et al. disclose beam transport system which is capable of delivering energy which may penetrate about 10 to about 20 cm beneath the surface of skin tissue in a treatment field (Col. 7, lines 54-61), delivering energy to produce a dose per shot in the range of .1 to 10 Gy (Col. 2, lines 27-32), or a dose per second of .1 to 100 Gy/second (Col. 2, lines 45-48).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize and substitute the method for performing radiation therapy on a patient of Slatkin et al. into the apparatus for generating and accelerating ultra-short electron pulses of Umstadter et al. in order to deliver the optimum dose and dose rate at a treatment field in a patient.

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With respect to claims 88-90, Slatkin et al. disclose beam transport system which is capable of delivering energy which may penetrate beneath the surface of skin tissue in a treatment, but fail to disclose that the pulse is guided through a fiber optic section to the target in a treatment field. However, S.B. Segall discloses (claim 42; Col. 14, line 57 to Col. 15, line 4; and Col. 19, lines 53-59) the delivery of energy where the pulse is guided through a fiber optic section to the target.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize and substitute the delivery of energy where the pulse is guided through a fiber optic section to the target of S.B. Segall into the method for performing radiation therapy on a patient of Slatkin et al. in order to deliver the optimum dose and dose rate at a treatment field in a patient.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rentzepis et al. (5,930,331) disclose a compact high-intensity pulsed X-ray source utilizing a pulsed laser to accelerate an electron beam.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikita Wells whose telephone number is (703) 305-0416. The examiner can normally be reached 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703) 308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular

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communications and (703) 872-9319 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Nikita Wells

Examiner, Art Unit 2881

July 8, 2003